# Hearing Conservation Emerging Issues

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CHPPM-EUR

*Readiness thru Health*

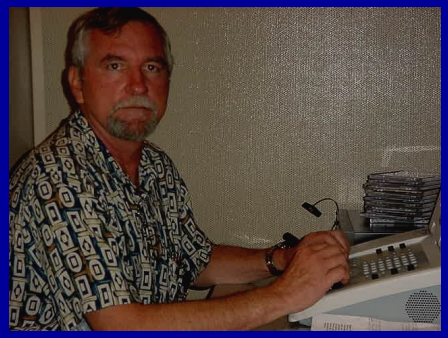
# Facts

- Noise is one of the primary occupational hazards in the Army
- Risk to Soldiers highest in 30 years
- Blast related injuries account for over 60% of all “wounded in action” evacuations in Operation Iraqi Freedom (OIF)
- Hearing Loss is among the leading reasons for medical referral of combatants returning from deployment

# Facts

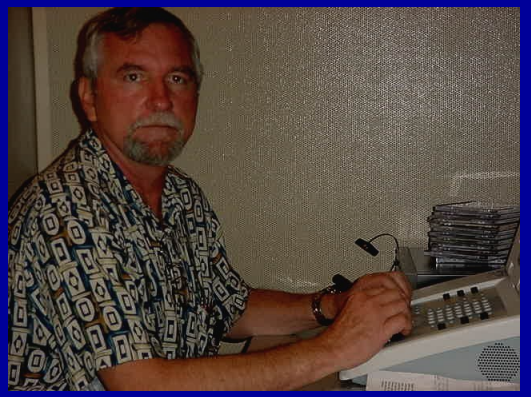
- Since March 2004
  - More than 5,000 post-deploying Soldiers referred to audiologists
  - 1,550 (31%) reported exposure to acute acoustic trauma or blast
  - 72% of those have hearing loss
  - Among all post-deploying personnel receiving hearing evaluations 21% have hearing loss 28% report tinnitus

# Facts



- Hearing Conservation is in critical status
  - Personnel constraints
    - 48 72C (Audiologist) authorizations eliminated
    - 26 civilian audiologists hired to fill vacancies
    - Only 1 civilian assigned to HC Mission
    - Hearing Conservation is an Army unique program
    - Fewer than 300 trained occupational audiologists within the profession
    - No civilian institutions provide training

# Facts



- Military-to-Civilian Conversions
  - Installations that have replaced 72C audiologists with civilian clinical audiologists have shown
    - 80% decrease in HCP compliance
    - 90% increase in hearing threshold shifts
- The latest military-to-civilian conversion will reduce the 72C military authorizations to 19
  - That is 2 fewer than Navy
  - Half of the Air Force
  - Yet the army is 23% larger than either service

# Facts

- Lack of command emphasis
  - Not a priority across the Army
    - Last Chief of Staff of the Army (CSA) command emphasis letter of 1978
  - The Army does not require earplugs as part of the duty uniform
  - Enforce use of hearing protection in non-tactical hazardous noise situations
  - Unit commanders routinely disregard medical recommendations of reclassification or no-deployment of Soldiers identified with disqualifying hearing loss

# Hearing Conservation USAREUR

- Between March 20, 2003 and May 25, 2004
- 564 soldiers seen at ENT from OIF/OEF
- 327 experienced acoustic trauma (blasts)
- 104 perforated eardrums
- 207 mild hearing loss/tinnitus
- 125 presented with hearing loss
- Of the 125 the majority had pre-existing hearing loss that worsened since deployment
- 61 attempted to feign a hearing loss
- 22 referred for complete balance function evaluation

# Hearing Conservation USAREUR

- Due to increased deployments, train-ups, and increased weapons fire over 62,000 Soldiers are at risk to hazardous noise
- Of those at risk a total of 14,232 were tested in 2004
- Over 20% tested post deployment required referrals for follow-up not meeting hearing criteria

# Hearing Conservation USAREUR

- There are 16 Audiologists OCONUS
  - Landstuhl
    - 1 Army
    - 1 Air Force
    - 1 Civilian
  - Wurzburg
    - 2 Army (1 Reserve) (Will lose authorization in 2008)
    - 1 Civilian
  - Hiedelberg
    - 1 Civilian
  - USACHPPMEUR
    - 1 Civilian (PCS unknown replacement)
    - 1 Military

    - * Over 100 DOEHRS-HC technicians trained

# Hearing Conservation USAREUR

Audiologists OCONUS

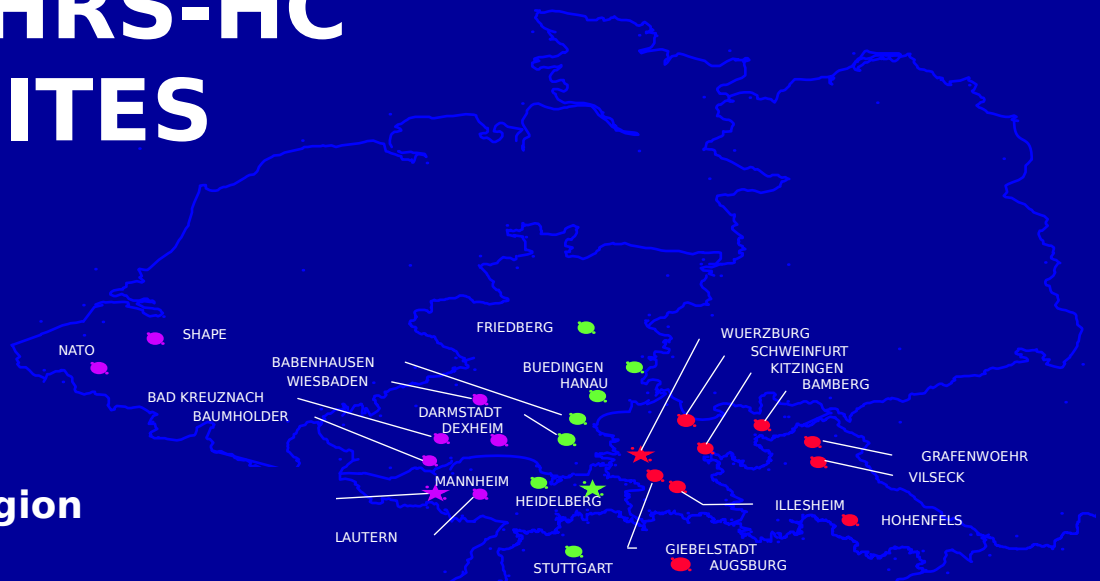
- Aviano
  - 1 Air Force
- Spangdahlem
  - 1 Air Force
- Naples
  - 1 Navy
- Lakenheath
  - 2 Air Force
- Rota
  - 1 Navy
- Sigonella
  - 1 Civilian

* Of these 16 only 5 are active in HC

# Hearing Conservation Sites

- 44 DOEHRS-HC Army
- 12 DOEHRS-HC Air Force (2003)
- 12 DOEHRS-HC Navy (2003)

# DOEHRS-HC SITES




## LRMC Region

LRMC
Kleber HC
Baumholder HC
1-6 IN BN
2-6 IN BN
4-27 FA BN
94th MLRS
Wiesbaden HC
Dexheim HC
Mons Hospital Shape
Chievres HC NATO AST
254th BSB Treebeek Ed CTR NL
Vicenza HC
Livorno HC
Kosovo
Kuwait
Iraq

*Hythe England (not Hosp. associated)

## HMEDDAC Region

HMEDDAC
Babenhausen HC
1/1 CAV Buedingen (
Buedingen HC
Darmstadt HC
Fliegerhorst BAS
Friedberg BAS (
2/3 FA BN Giessen
Hanau HC
Mannheim HC
Sandhofen HC
Coleman
Stuttgart HC

## WMEDDAC Region

WMEDDAC
Kitzingen HC
Giebelstadt HC
Schweinfurt HC (
299 FSB CAS Conn
1st AVN BDE
Katterbach
Illesheim AST
Bamberg HC
Grafenwoehr HC
Vilseck HC
¼ IN BN Vilseck
Hohenfels HC

# SAFE

# *MilitaryHearing Loss Disability*

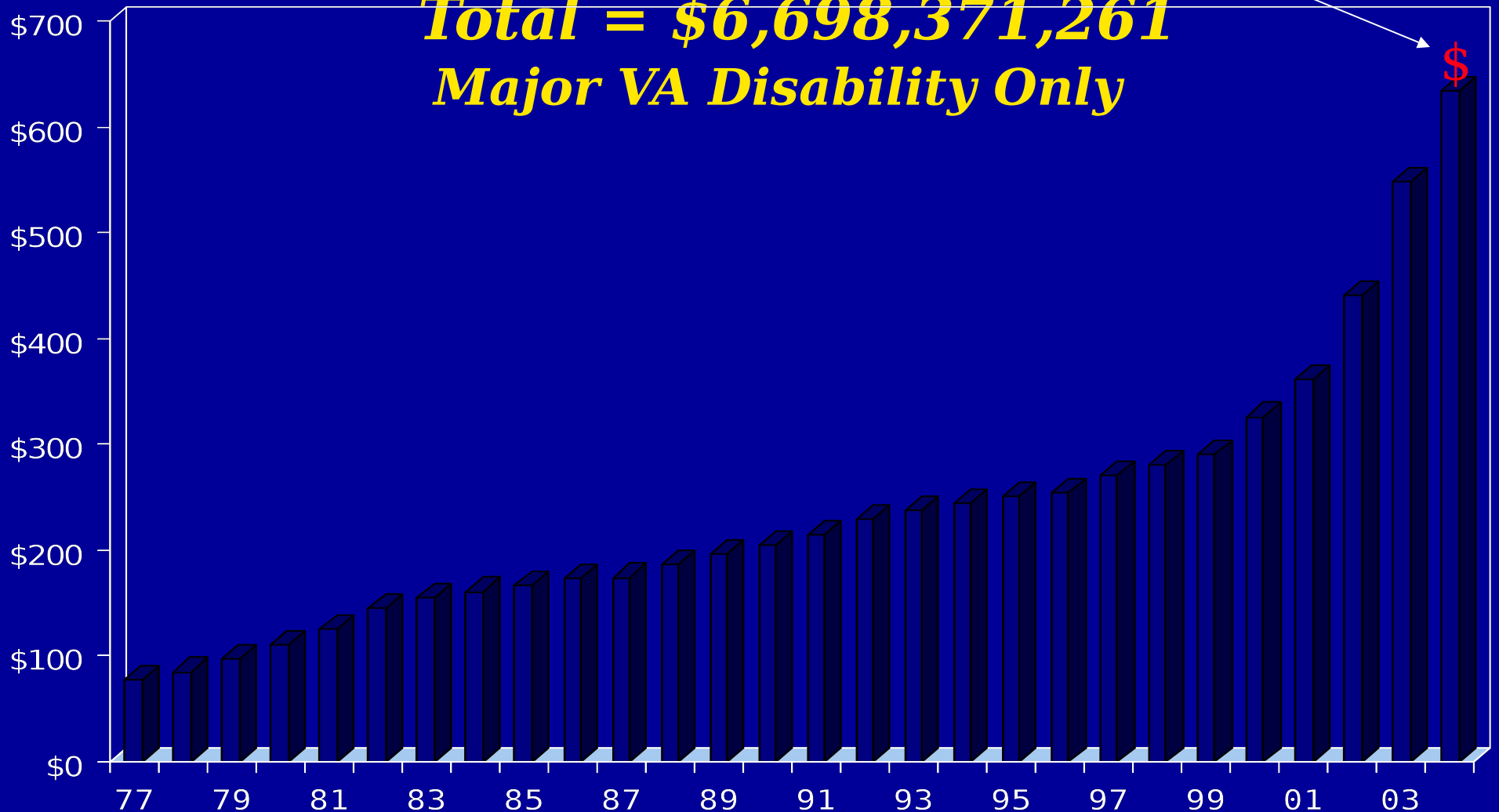
## *2004*

# Cost of Hearing Loss for All Veterans

## 1977-2004

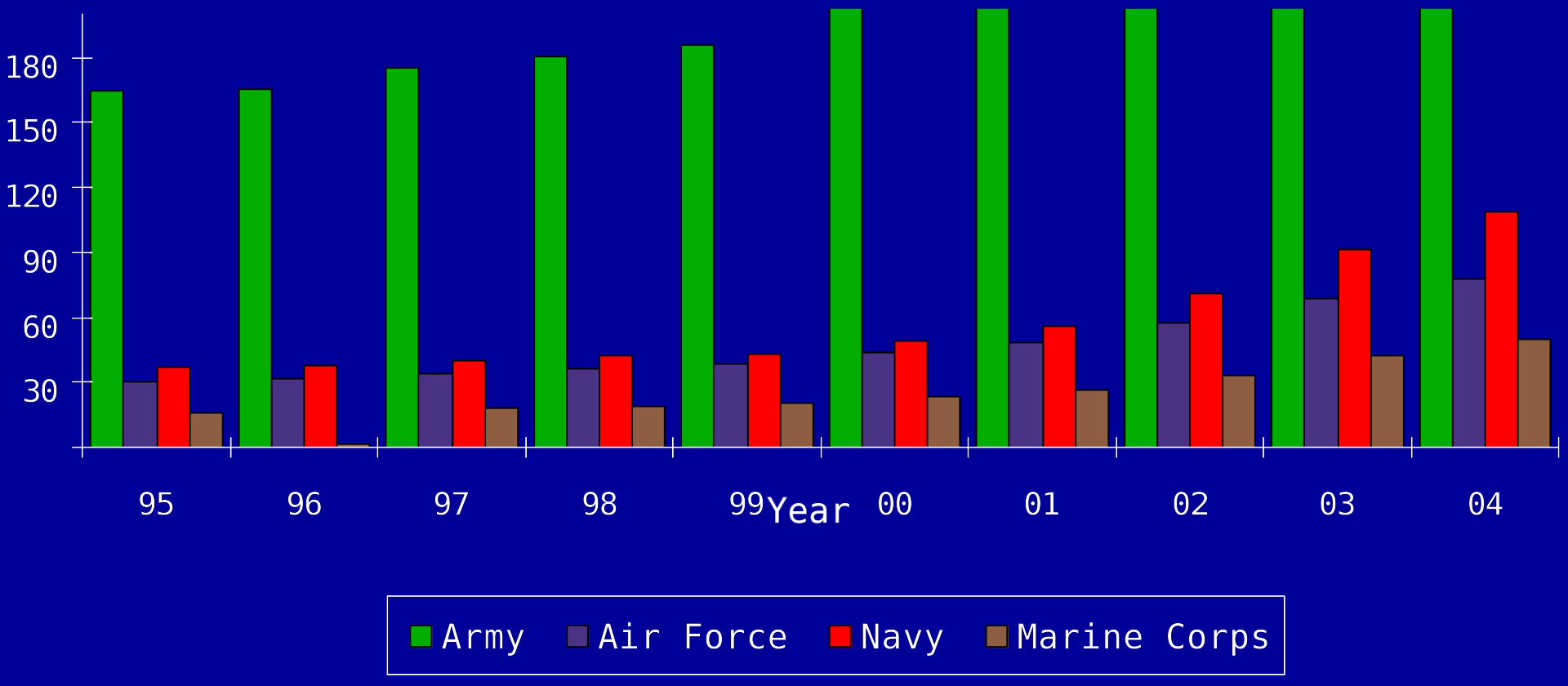
**Total = $6,698,371,261**

**Major VA Disability Only**

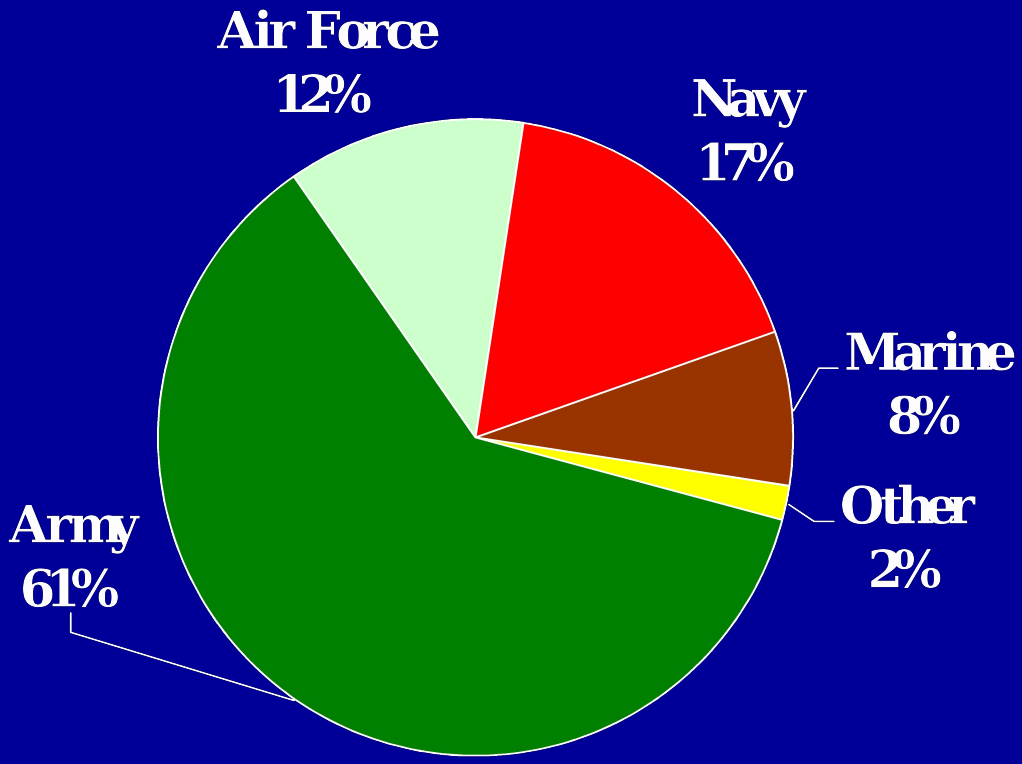


# Veterans Hearing Loss Disability Costs 1995-2004

| | 2004 |
|---|---|
| Army | $386,912,496 |
| Air Force | $ 78,104,208 |
| Navy | $ 108,803,256 |
| Marine Corps | $ 49,617,912 |



# Veterans Hearing Loss Disability Costs 2004




***Major disability only***

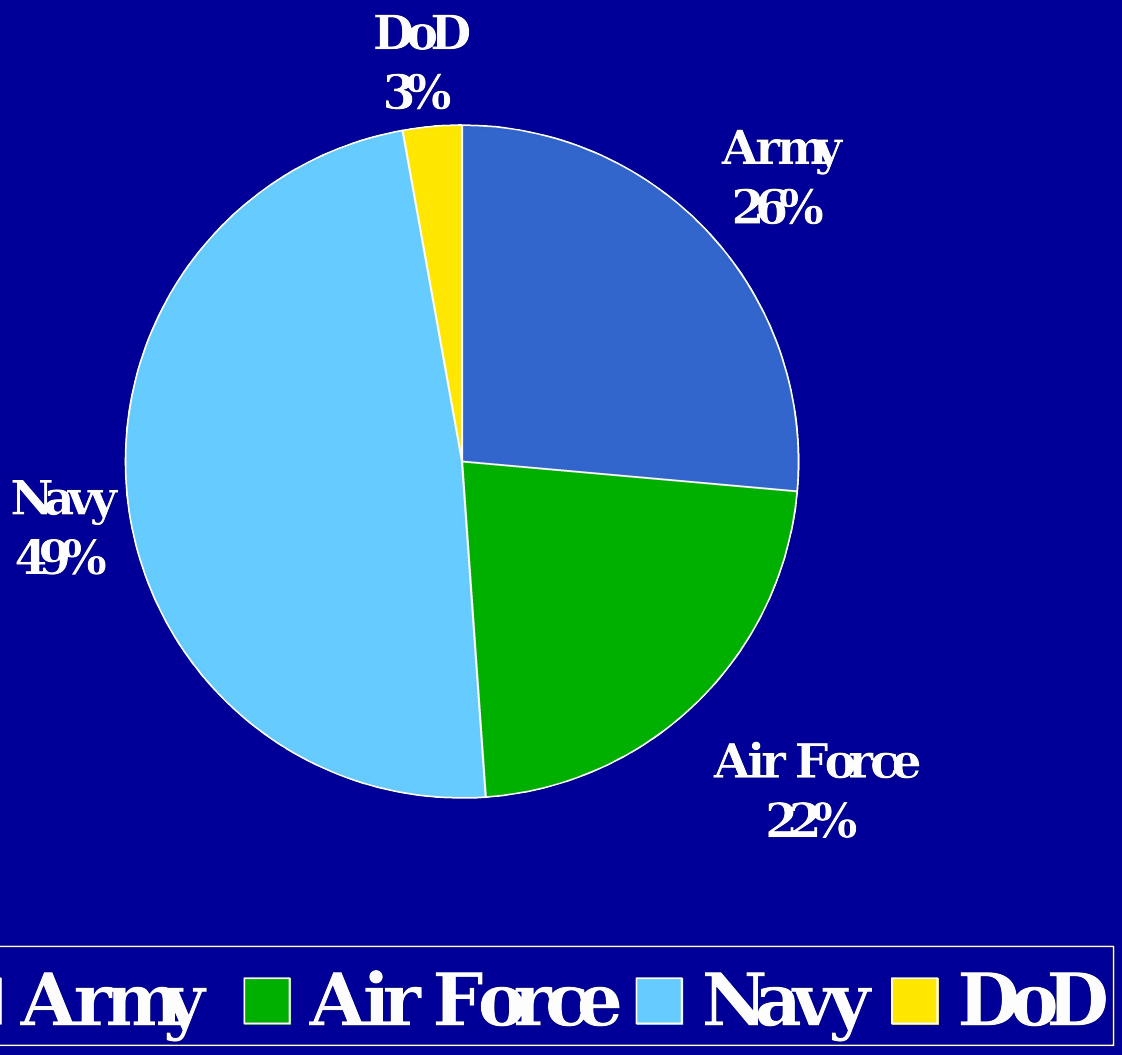
***Total = $633,841,296***

Other includes USCG, WAC, AAC, and All Other

# Civilian Hearing Loss Compensation 2004

# Civilian Hearing Loss Compensation 2004

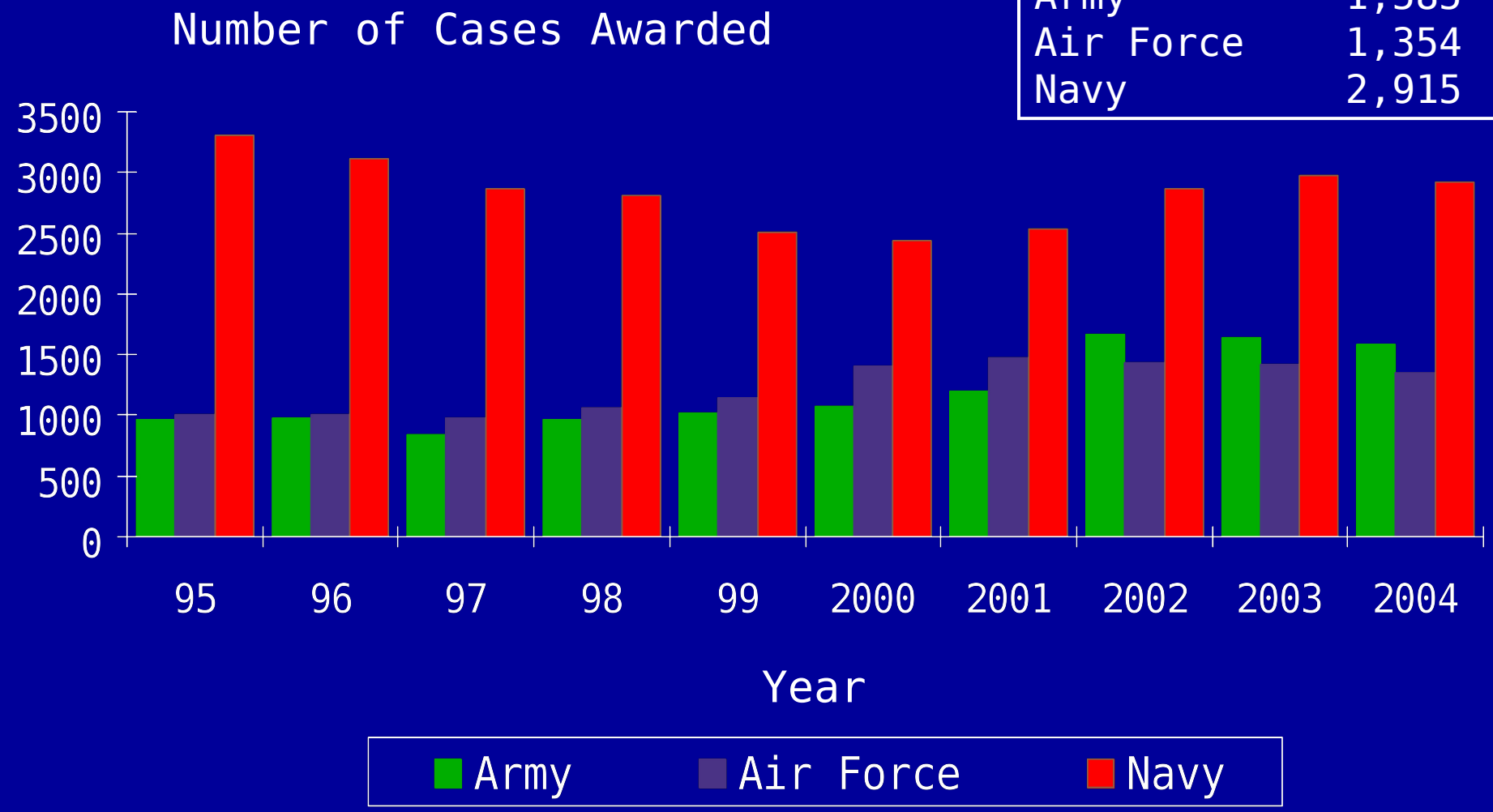
*Distribution of Cases*



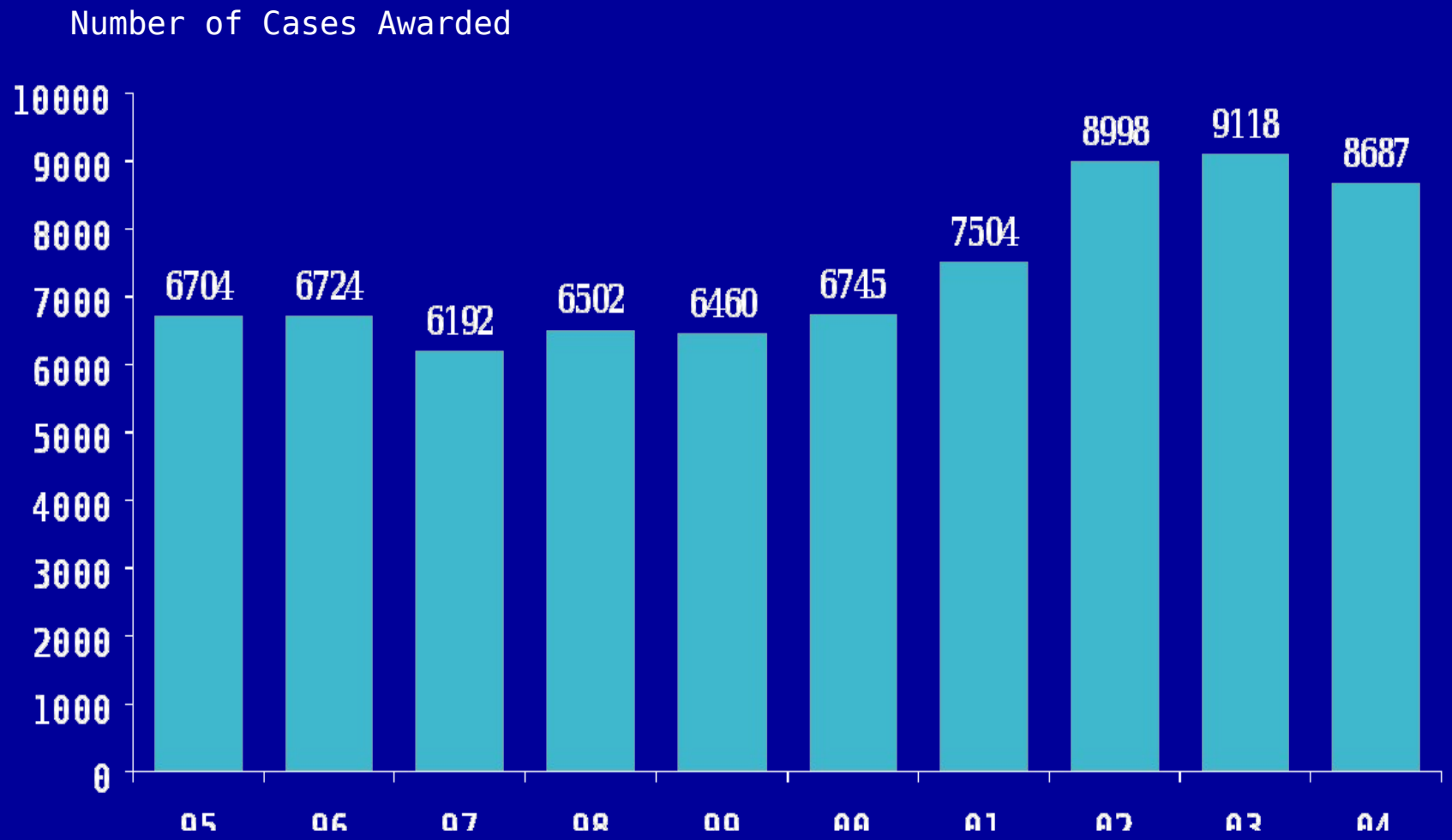

Number of Cases = 6,019

# Civilian Hearing Loss Compensation Cases 1995-2004

| 2004 | |
|---|---|
| Army | 1,585 |
| Air Force | 1,354 |
| Navy | 2,915 |

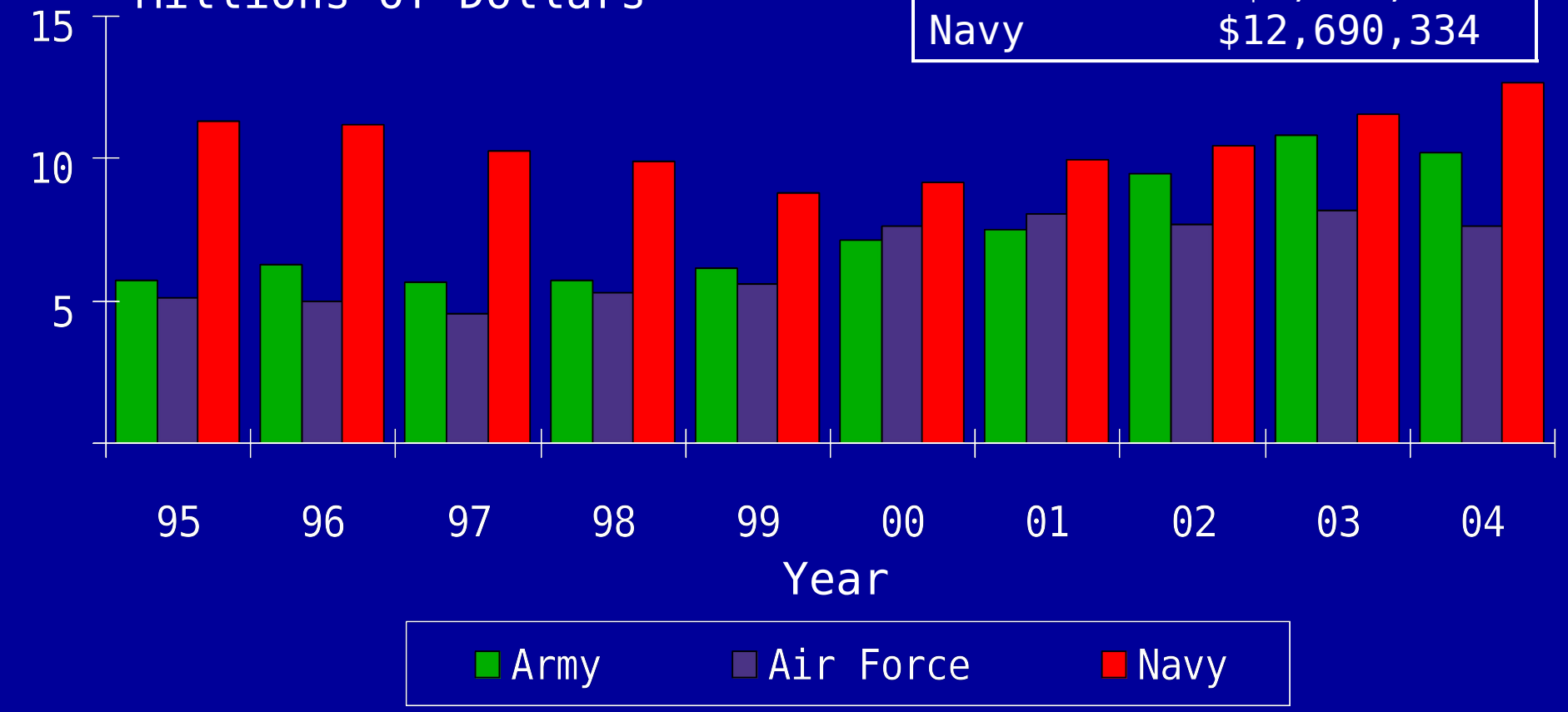


# Civilian Hearing Loss Federal Compensation Cases 1995-2004



# Civilian Hearing Loss Compensation Costs 1995-2004

| | 2004 |
|---|---|
| Army | $10,197,841 |
| Air Force | $7,595,673 |
| Navy | $12,690,334 |



# Average HL Claim

## *2004*

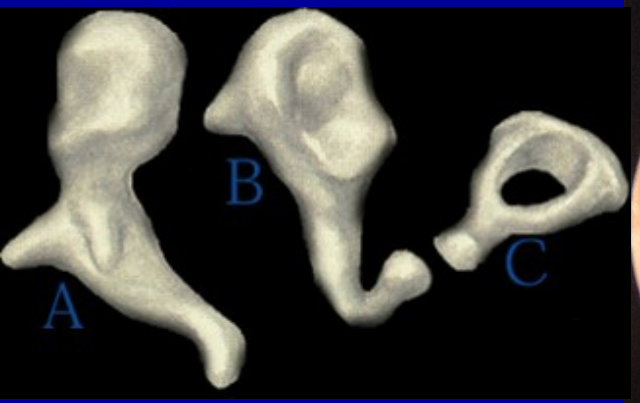
| | |
|---|---|
| Army | $6,434 |
| Air Force | $5,610 |
| Navy | $4,353 |
| DoD (Other) | $6,282 |
| All Federal Employees | $6,227 |

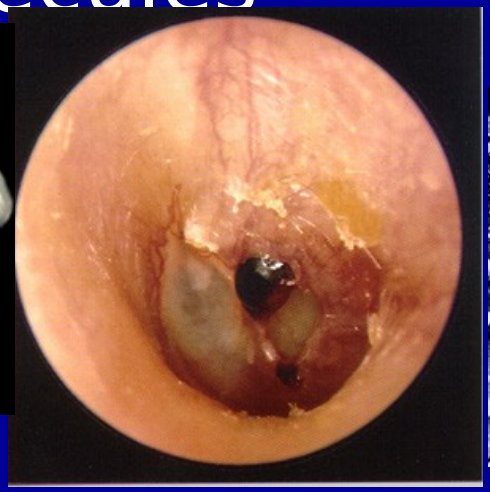
# Field Initiatives

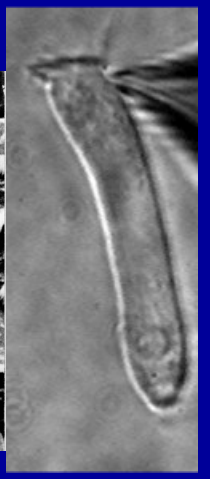
- Landmark discoveries about how the cochlea is damaged
- Damage Occurs in two classifications
  - Mechanical (loud blasts above 125-130 db SPL) tearing of structures
  - Metabolic Exhaustion (habitual noise exposure) toxic wastes products known as free radicals or reactive oxygen species (ROS) this is more common

# What’s new to the Picture

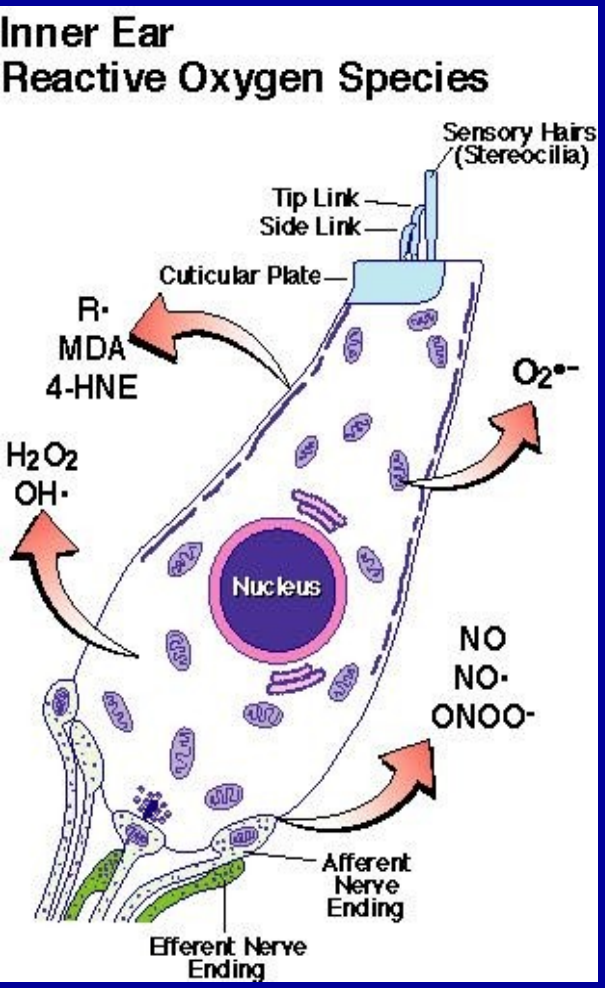
- Our body reacts to brutal stress like noise trauma by presenting a defense of anitoxidant enzymes and other molecules



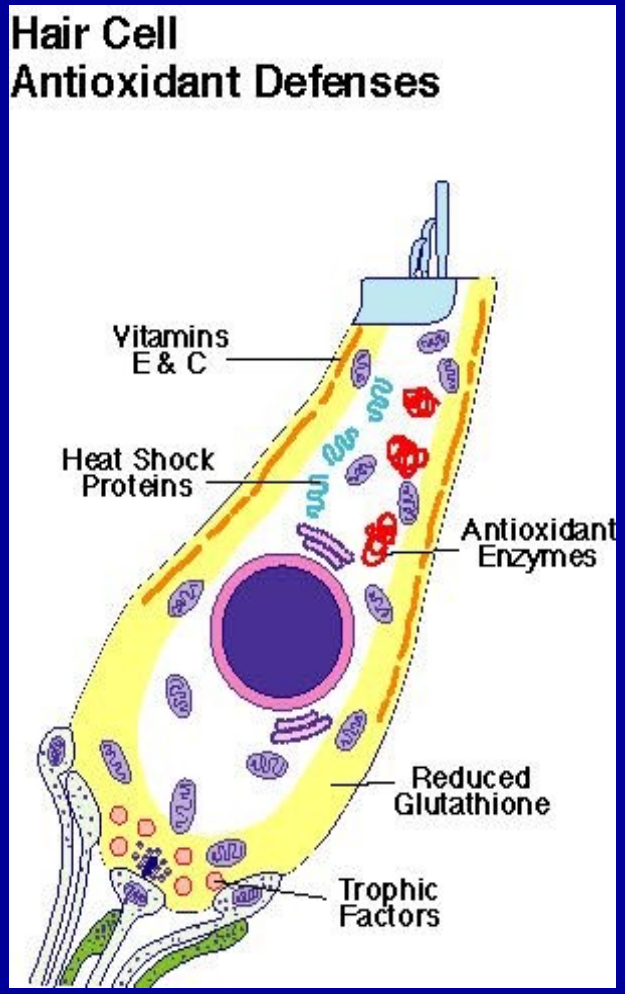


## A



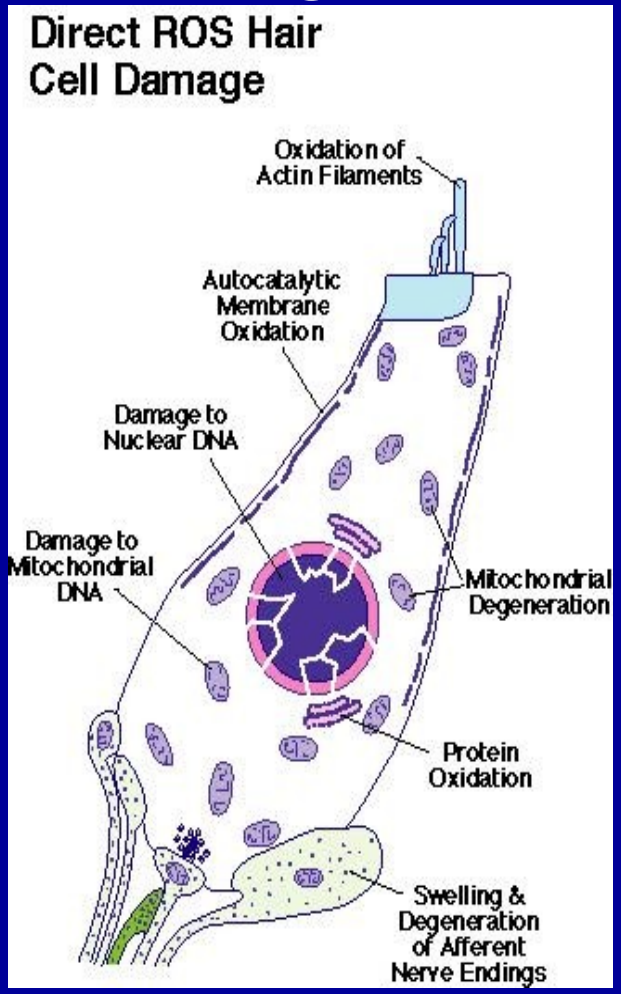

Four main forms of reactive ROS produced by hair cells undergoing oxidative stress. Acoustic trauma causes the stereocilia to prompt the hair cell to generate ROS,

## B



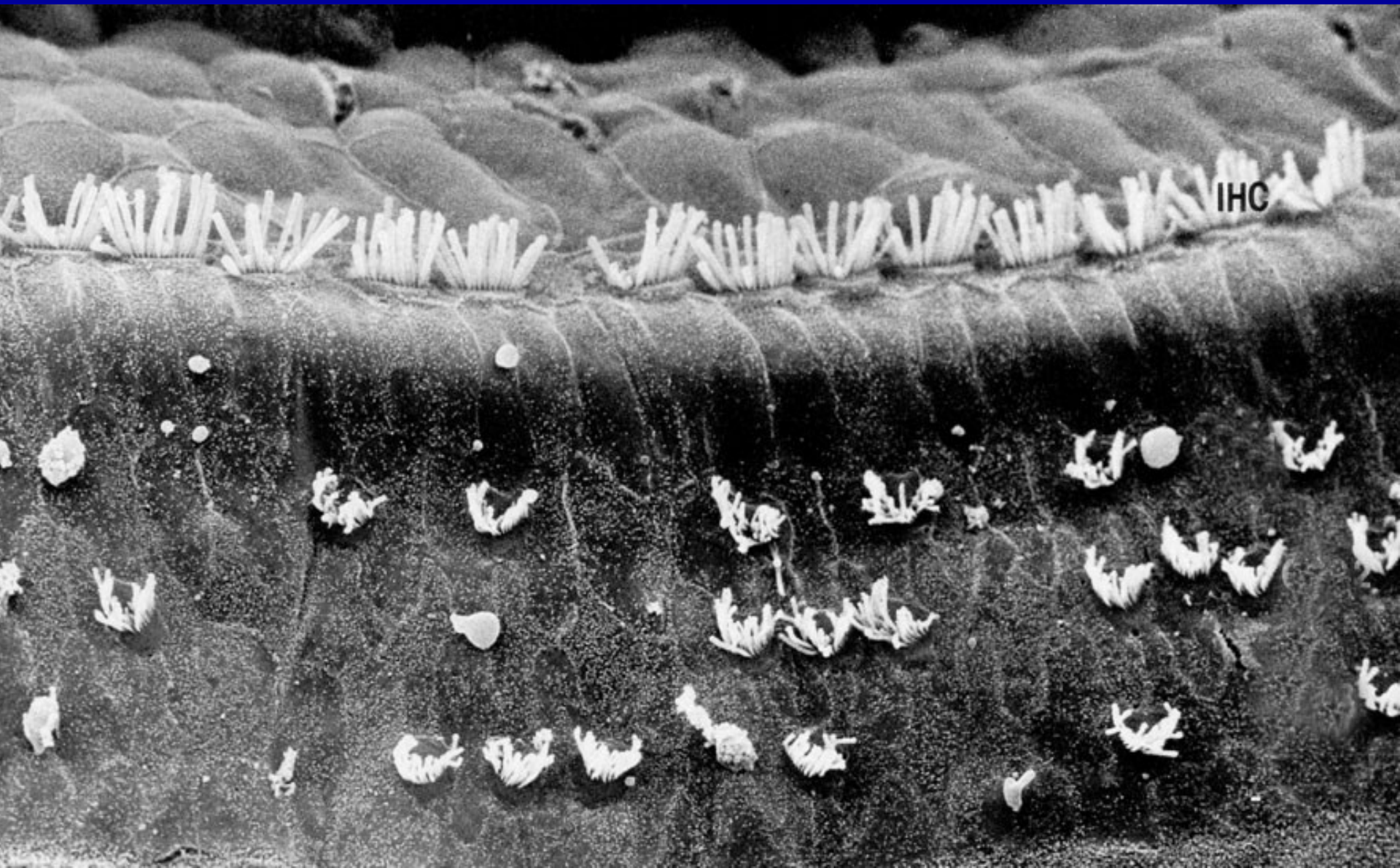

Main antioxidant defenses available to hair cell that may control oxidative damage from ROS. They protect the cell by preventing production of ROS or by removing before it can damage the nucleus or other

## C




Forms of cell damage and injury caused by ROS when the damage exceeds capability of antioxidant defenses. These forms of cell damage and injury

# Damaged Hair Cells



# The Hearing Pill

***N-acetylcysteine***

When administered in conjunction with external hearing protection, uses of *The Hearing Pill* include hearing loss prevention in the work and training environments where people are exposed to a combination of noise and toxins such as the aviation field, construction sites, homeland security, various manufacturing settings, landscape maintenance, emergency response and a variety of other noise insulting environments. Additionally, protection against recreational noise hazards such as sporting events, firearms shooting, music concerts, automotive racing and other areas is also an important target market for *The Hearing Pill*. ***American BioHealth Group announces availability of***

# Noise Sampling NIOSH

- **Noise Sampling Strategies and Exposure-Response Models** There is evidence that impulsive noise may have more of an effect on hearing loss than continuous noise exposure at the same 8-hour time-weighted average (TWA).
- This project will improve on existing noise and hearing loss exposure-response analyses by determining the most accurate way of estimating the time-weighted average TWA and incorporating the combined effect of impulsive and continuous noise.
- The study will collect more precise measures of impulsive noise and examine different exposure metrics that may be applied in models describing the risk of hearing loss due to impulsive noise. Two main approaches to estimating the TWA noise exposure will be compared: task-based assessment (noise levels associated with each task in a given job, combined with time-at-task) and dosimetry (full-shift personal monitoring).
- Additionally, repeated measures of noise over several points in time on individuals and jobs will permit an evaluation of how the precision of different exposure assessment approaches affects the exposure-response analysis.

# Other Thoughts

- Smokers have a 70 percent greater risk of suffering from hearing loss than nonsmokers.
- Consume antioxidants that have free-radical fighting properties. Two nutrients that are excellent sources of antioxidants are vitamins C and E.
- Help protect the ear, supplements like vitamin E and foods rich in antioxidants, such as raisins and prunes. Additionally, research shows that supplement N-acetylcysteine is helpful.
- Exercise promotes better hearing by increased blood flow.

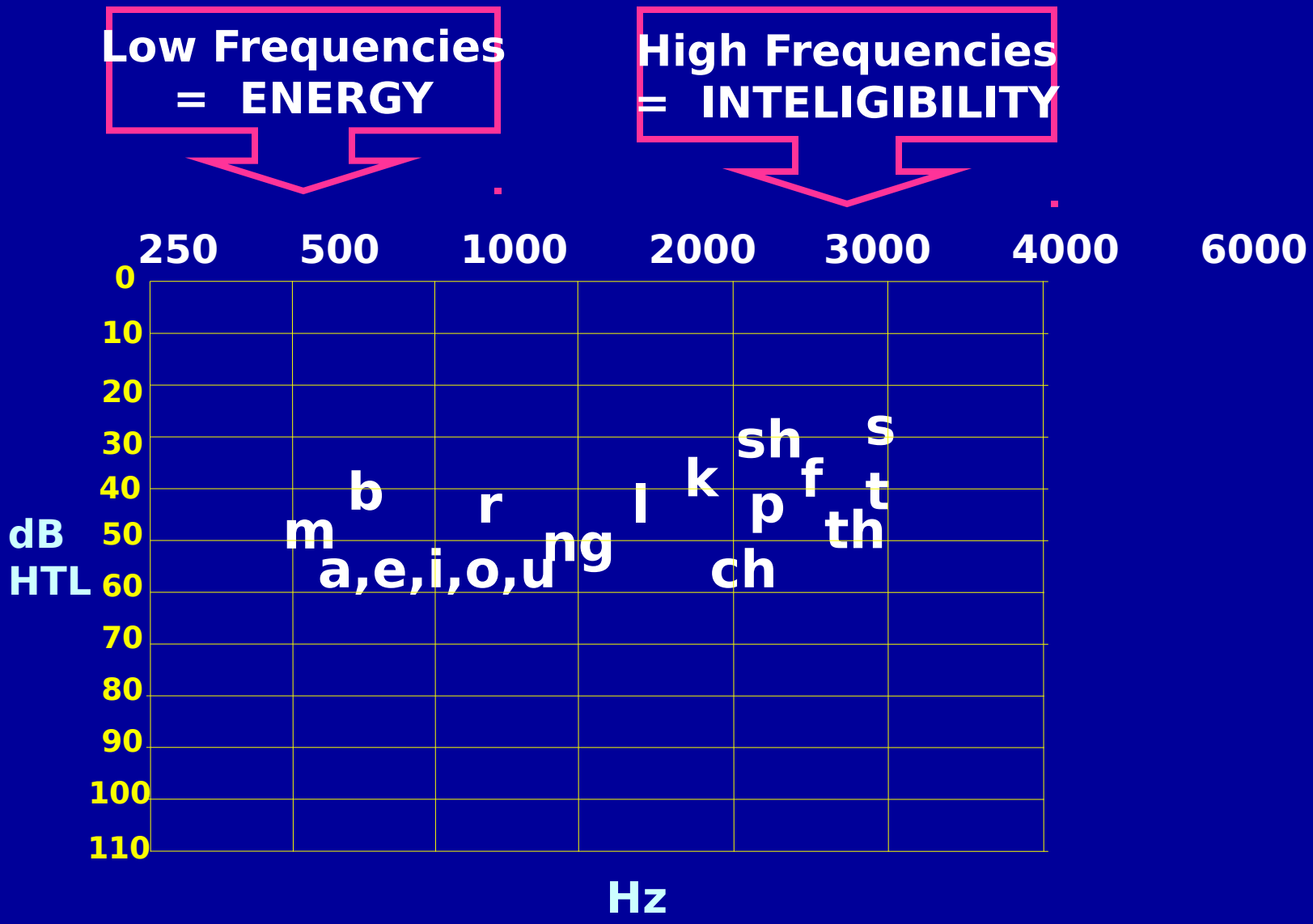
# A Little Rage

# Physiological Aspects

- People understand speech better in noise when wearing hearing protection
- Noise causes some clinical manifestations of stress
  - Change in heart rate
  - Galvanic skin response
  - Ulcer formation increased activity
  - Changes in intestinal motility
  - Irritability
  - Increase in sugar, cholesterol, and adrenaline
  - Vasioconstriction
  - Muscle contraction
  - Dilated pupils
  - Loudness perception

Hearing Protection and Speech Understanding

# Audiogram With Speech Informatio



Can you read this sentence
WITHOUT the high frequencie

Ou o i i on e ird o

And WITH the high frequenci

Our office is on the third flo

# Hearing Conservation Initiatives

- Baseline Audiogram Requirement
  - Personnel Policy Guidance (PPG) Army G-1, September 2004
    - Requires all deploying Soldiers to
      - Be fit with hearing protection
      - Have a baseline audiogram (DD2215) performed if they do not already have one established
  - Army Training Center Initiative
    - April 2004 MEDCOM & TRADOC established that 100% HC services will be provided at all Basic Training sites
      - FT Sill  FT Benning have authorizations and doing mission
      - FT Jackson no authorization but has 72C since August 2004
      - FT Knox and FT Leonard Wood no authorizations no movement to comply with this mission requirement

# Hearing Conservation Initiatives

- Hearing Conservation Sites
  - Iraq
  - Kuwait
  - Kosovo
  - Bosnia (Closed) assets moved to Kosovo
  - Other countries
    - Deployed Soldiers at these sites receive HC services
      - Hearing Protection
      - Counseling
      - Testing
      - Hearing services

# QUESTIONS ?????

**Don't delete this because it looks weird. Believe it or not you can read it.**

**I cdnuolt blveiee taht I cluod aulaclty uesdnatnrd waht I was rdgnieg. The phaonmneal pweor of the hmuan mnid. Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn't mttaer in waht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteer be in the rghit pclae. The rset can be a taotl mses and you can sitll raed it wouthit a porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe.**

**Amzanig huh? yaeh and I awlyas thuohgt**